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<pre>graph TD subgraph Scope_of_H323 [Scope of H.323] H323_Terminal1[H.323 Terminal] H323_MCU[H.323 MCU] H323_Gatekeeper[H.323 Gatekeeper] H323_Gateway[H.323 Gateway] H323_Terminal2[H.323 Terminal] H323_Terminal3[H.323 Terminal] H323_Terminal4[H.323 Terminal] end H323_Terminal1 --- H323_MCU H323_MCU --- H323_Gatekeeper H323_MCU --- H323_Gateway H323_Gatekeeper --- H323_Gateway H323_Gateway --- FSN_Network((FSN Network)) H323_Gateway --- ISDN_Network((ISDN Network))</pre>			
(57) Abstract <p>The present invention relates to a method for establishing multipoint conferences, especially for local/wide area networks, more specifically a packet switched network, comprising user terminal means and functionality means for establishing such conferences, and in order to let participants establish contact with such conferences in a more rational and expedient manner, it is according to the present invention suggested that each conference instance is assigned a telephone number enabling participants to directly dial into the associated multipoint conference.</p>			

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METHOD FOR ESTABLISHING MULTIPOINT CONFERENCES

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FIELD OF THE INVENTION

The present invention relates to a method for establishing multipoint conferences, of the type as stated in the preamble of the enclosed patent claim 1.

More specifically, the present invention relates to naming/addressing of multimedia multipoint conferences in local/wide area networks, i.e. packet switched networks, which do not provide a guaranteed Quality of Service (QoS).

BACKGROUND OF THE INVENTION

The H.323 standard which describes terminals, equipment and services for multimedia communication (voice, video and data) over Local Area Networks (LANs/WANs) which do not provide a guaranteed Quality of Service (QoS) is currently being specified by ITU-T.

25

The enclosed Figure 1 shows the interoperability of H.323 terminals in the H.323 standard.

An **H.323 Terminal** is an endpoint on the local area network which provides for real-time, two-way communications with another H.323 terminal, Gateway, or Multipoint Control Unit. This communication consists of control, indications, audio, moving colour video pictures, and/or data between the two terminals. A terminal may provide speech only, speech and data, speech and video, or speech, data, and video.

The **Multipoint Control Unit (MCU)** is an endpoint on the local area network which provides the capability for three or more terminals and Gateways to participate in a multipoint conference. Two terminals may also be connected in a point-to-point conference which may later develop into a multipoint conference.

An **H.323 Gateway (GW)** is an endpoint on the local area network which provides for real-time, two-way communications between H.323 Terminals on the LAN and other ITU Terminals on a wide area network, or to another H.323 Gateway. Other ITU Terminals include those complying with Recommendations H.310 (H.320 on B-ISDN), H.320 (ISDN), H.321 (ATM), H.322 (GQOS-LAN), H.324 (GSTN), H.324M (Mobile), and V.70 (DSVD).

The **Gatekeeper (GK)** is an H.323 entity on the LAN that provides address translation and controls access to the local area network for H.323 terminals, Gateways, and MCUs. The Gatekeeper may also provide other services to the terminals, Gateways, and MCUs such as bandwidth management and locating Gateways.

THE STATE OF THE ART

According to H.323, a multipoint conference is a conference between three or more terminals. The terminals may be on the LAN or on the Switched Circuit Network (i.e. on the PSTN or ISDN network).

When a multipoint session is established on an MCU, the session/conference is given an alias name - usually a textual descriptive name, by the initiator of the conference. This name can be any combination of characters and numbers. When a participant on the LAN wishes to join a conference s/he does so by contacting the MCU. In an IP network this is accomplished by addressing the MCU's IP-

address. The current/ongoing conferences on that MCU is then returned and displayed in textual format on the participant's terminal. The participant may then join the wanted conference, either by typing in the name of the conference or possibly by double-clicking on the wanted session with the mouse.

THE PROBLEM AREA RELATED TO PRIOR ART

10 Users on the PSTN/ISDN network who wants to place a call into the LAN/WAN do so through an H.323 gateway. However, the user interface of a Plain Old Telephone makes it cumbersome (if not impossible) to enter an IP address or a textual name in order to establish a connection with a terminal on the LAN/WAN. According to H.323 this can be simplified by allocating an E.164 telephone number to each callable terminal in the network.

20 This E.164 number allocation opens for the possibility to dial directly to a terminal in the LAN/WAN through a H.323 gateway. Being able to dial directly to a terminal from the PSTN/ISDN network gives a more seamless interface between the different networks and opens for interaction between them on a service level (e.g. allowing for call transfers from the PSTN/ISDN network to a terminal in the H.323 network).

30 For multipoint conferences however, this causes a problem. An MCU can host maybe several hundred multipoint conferences (conference instances) on the same terminal (IP address) and, hence, being able to call the MCU itself is not enough in order to join an ongoing conference.

35 FURTHER PRIOR ART

EP 0 717 546-A2 (Altom et al./AT&T Corp.) relates to a

multimedia user interface for accessing a network-based multipoint meeting. The communication network suggested by this prior art is for example a long distance telecommunication network composed of a plurality of well known digital switching units and may contain one or more packet networks. The user will start the multipoint meeting procedure by starting a computer-related programme, through an appropriate application programme interface. However, although the user may have a telephone available, no hints are given in this publication that a range of allocated telephone numbers is specifically allocated for multipoint conferences, let alone that such telephone numbers are related to packet switch networks comprising gateways and gatekeepers.

EP 0 691 780-A2 (Biggs et al. (AT&T Corp.)) relates to a multimedia conferencing system, comprising a method wherein all conferences have their own unique conference identification number. According to this prior art two first endpoint devices may dial directly to the specific multipoint conference, whereas a third endpoint device may be added via dial-out calling. However, also this prior art method is related to primarily a circuit switch network, thereby giving no instructions for routing such telephone calls in a packet switch network, let alone giving any instructions for handling a multipoint control unit in such latter networks through a specifically adapted multipoint control unit.

AU 673763 (Bohm/Alcatel N.V.) relates to a mobile-radio network comprising a mobile switching centre which switched point-to-point connections between mobile-radio subscribers within the mobile-radio network. According to this prior art the mobile-radio subscribers may have a TN 007 telephone number which is assigned to a conference service unit, so that by dialling this number the conference service can be requested by each subscriber within

the mobile-radio network PLMN, or by another network PSTN connected to this mobile-radio network, i.e. the conference-service unit is dialled like a normal mobile-radio subscriber. However, this prior art relates to a switching network, i.e. having no relation to networks which generally do not support telephone services, i.e. packet switch networks which are based on a different technology.

10 OBJECTS OF THE INVENTION

A main object of the present invention is to suggest a solution to the problems related to prior art as discussed in the preceding sections.

15

Consequently, a more specific object of the present invention is to enable participants on a PSTN/ISDN network to directly dial into a multiconference on LAN/WAN.

20 Another object of the present invention is to suggest a more effective utilisation of the multipoint control unit involved in the network in question.

25 A further object of the present invention is to suggest a dynamically allocated range of numbers in an MCU so as to still better utilise said MCU.

SUMMARY OF THE INVENTION

30 The above objects are achieved in a method as stated in the preamble, which according to the present invention is characterised by the features as stated in the characterising clause of the enclosed patent claim 1.

35 Further features and advantages of the present invention will appear from the following description taken in conjunction with the enclosed drawings, as well as from the

appending patent claims.

BRIEF DISCLOSURE OF THE DRAWINGS

5 Fig. 1 is a schematic diagram illustrating a prior art network based on the H.323 standard, comprising terminals, equipment and services for multimedia communication, and illustrates the interoperability of H.323 terminals thereof.

10

Fig. 2 is a schematical illustration of an embodiment of the present invention, especially related to a network which does not support telephone services.

15

DETAILED DESCRIPTION OF EMBODIMENTS

Fig. 1, as stated previously, illustrates a prior art network based on H.323 standard, comprising terminals, equipment and services for multimedia communication, and
20 illustrates the interoperability of H.323 terminals thereof, as discussed previously.

As regards the present invention the primary features thereof may be summarised as follows:

25

SOLUTION

By associating an E.164 telephone number to a conference instance, this will enable participants on the PSTN/ISDN
30 network to directly dial into a multipoint conference on the LAN/WAN. However, conferences come and go, and their existence may be limited to only a few minutes. Hence it is not feasible to manually allocate an E.163 number to a multipoint conference.

35

By allocating an E.164 number range to an MCU on the LAN, and letting the MCU controls/give names to the confer-

- ences, E.164 numbers can dynamically be allocated to a multipoint conference from this range. Users on the PSTN/ISDN network may then join a conference on the LAN simply by dialling the assigned E.164 number for the
- 5 wanted conference. The number to dial have to be published to the participants by the initiator/scheduler of the conference together with the date and time to join. For a future conference, the E.164 number can be allocated when the conference is scheduled. This however,
- 10 does not mean that the allocated E.164 number can not be used for other conferences in the meantime. It is all up to the scheduling mechanism of the multipoint conference unit to administer the use of the numbers.
- 15 A user on the PSTN/ISDN network who tries to dial an E.164 number which has been allocated to an MCU but which is currently not used to name a conference, should be given the same indication as if s/he tried to dial a number which is not in use.
- 20 If a users calls a number which is currently in use for a conference s/he will then join that conference. The idea of securing a conference, i.e. not letting anybody unknown (or unwanted) to join the conference is not meant
- 25 to be a topic of discussion in this document, but this can e.g. be solved by forcing the joining participant to enter a password (number) in order to be granted access to the conference.
- 30 The same solution could be used if two-stage dialling is used in the H.323 gateway. This to avoid conflicts if a conference is given an internal number which is already in use, e.g. by some user in the LAN. The number plan may then be locally managed.
- 35 Fig. 2 illustrates schematically in more detail how embodiments of the invention can be realised. In this em-

bodiment the multipoint alias for one conference may for example be : 66 84 12 01, which is among the specific range of telephone numbers allocated for conference instances, and being registered with the Multipoint Control Unit (MCU).

P a t e n t c l a i m s

1. Method for establishing multipoint conferences, especially for local/wide area networks (LAN/WAN), comprising a Multipoint Control Unit (MCU) providing capability of three or more terminals (H.323) and gateways (GW) to participate in a multipoint conference, and comprising a gatekeeper (GK) providing address translation and controlling access to LAN/WAN, so as to allow direct dialing to a terminal on said LAN/WAN through a gateway (GW), i.e. between different networks, characterised in that in said Multipoint Control Unit (MCU) there is allocated a specific range of telephone numbers to respective conference instances, for thereby enabling participants on a different network, i.e. a PSTN/ISDN network to dial directly into the associated/specific multipoint conference.
2. Method as claimed in claim 1, characterised in that upon initiation of the scheduler of the conference the MCU is adapted to give names to the individual conferences, and thereafter dynamically allocate one of the specific telephone numbers, the allocation being for a certain span of time, for example the span of time for which a conference is scheduled.
3. Method as claimed in claim 1 or 2, characterised in that the MCU is adapted to dynamically use the same number in the specific range of allocatable numbers for several conferences which are scheduled for different date and/or time.
4. Method as claimed in any of the preceding claims, characterised in that the assigned telephone number has one or more passwords associated therewith.

5. Method as claimed in any of the preceding claims,
c h a r a c t e r i s e d i n that if one of the par-
ticipants in the conference is called at his direct
5 number, the caller will receive a busy line signal.

6. Method as claimed in any of the preceding claims,
c h a r a c t e r i s e d i n that the assigned tele-
phone number has one or more passwords associated there-
10 with.

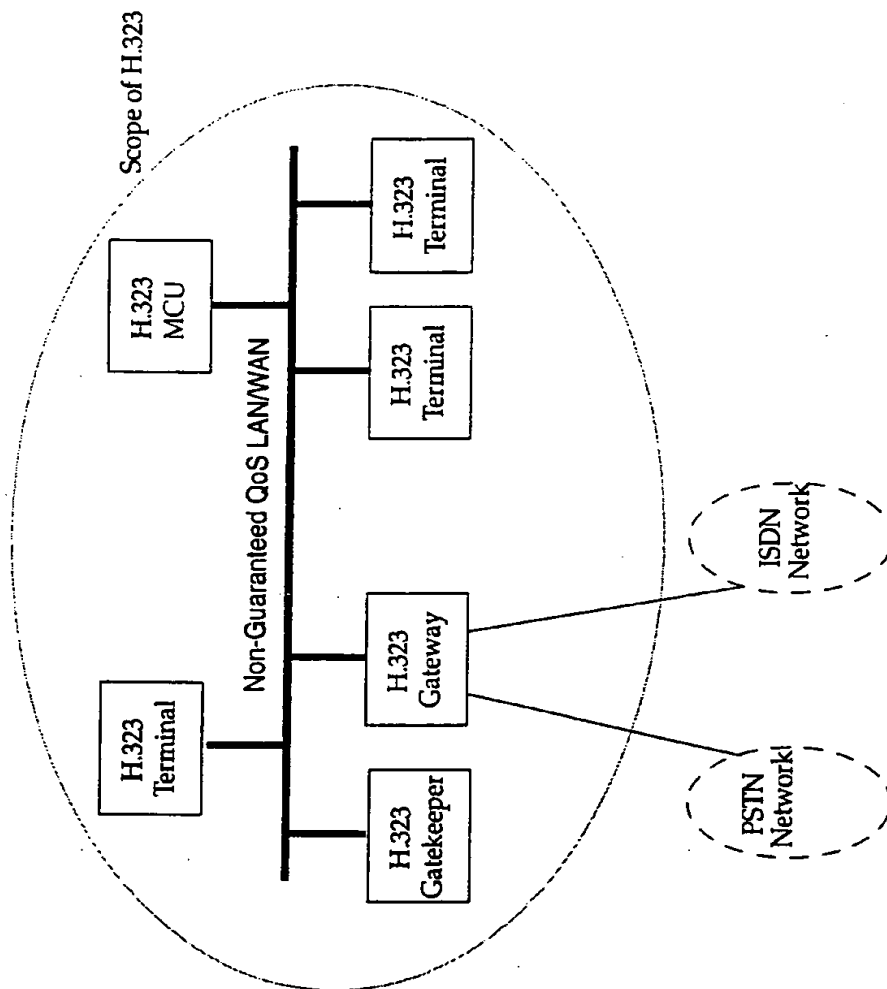
7. Method as claimed in any of the preceding claims,
c h a r a c t e r i s e d i n that an external user
may have access to the conference by calling the con-
15 ference from an external terminal by means of the related
E.164 telephone number, eventually followed by a password
or code to access the conference.

8. Method as claimed in any of the preceding claims,
20 c h a r a c t e r i s e d i n that the assigned tele-
phone number may be used by users or terminals related to
an intranet, an ISDN network, PSTN network, etc.

9. Method as claimed in any of the preceding claims,
25 c h a r a c t e r i s e d i n that participants in the
conference may have different equipment, e.g. two parti-
cipants may use audio-video; and data equipment and two
other participants may use telephone equipment with only
audio.

30 10. Method as claimed in any of the preceding claims,
c h a r a c t e r i s e d i n that a multipoint con-
ference may comprise audio-, audio- and video and/or
audio, video and data users.

35

FIG. 1

